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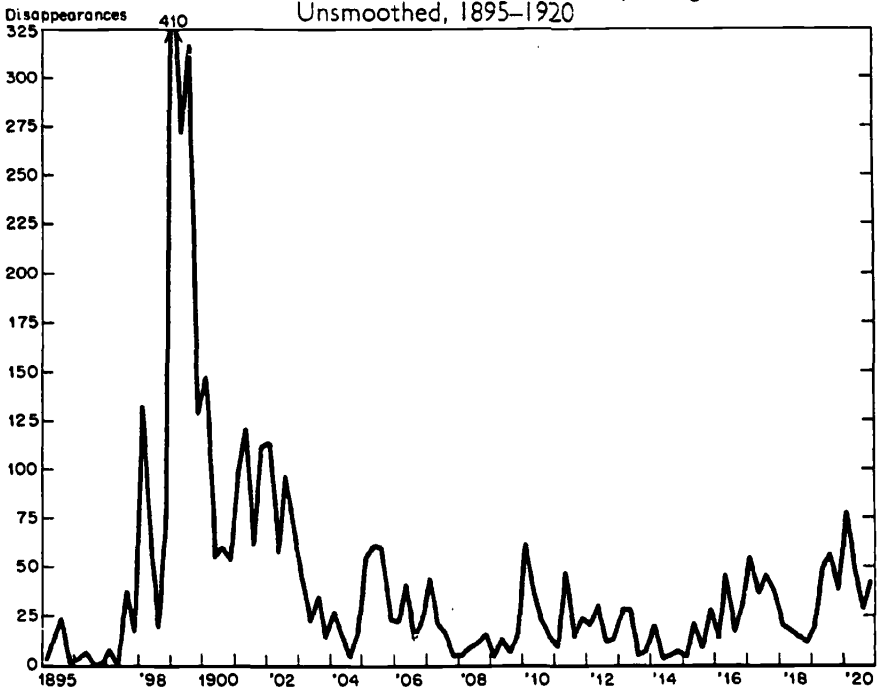
# Chapter 3. The Merger Movement from 1895 through 1920

The large wave of mergers at the turn of the century has never been characterized in sufficient detail to permit definitive analysis; no earlier discussions covered such important aspects as industry composition, size distribution, and type of merger. The merger pattern from 1904 to 1919 has never been described at all. The study makes possible a survey of this dimly perceived yet important quarter-century of merger history. The immense merger peak of 1899–1901 will be more clearly revealed, and it becomes more impressive when set against the mergers of the two succeeding decades.

After a survey of the fluctuations in merger activity, later sections will deal with its industrial composition and size distribution, the comparative roles of acquisitions and consolidations, and the distribution of merger activity among states, that is, by state of incorporation. As throughout, observation is confined to the manufacturing and mining industries.

CHART 2
Quarterly Series of Firm Disappearances by Merger, Unsmoothed, 1895–1920




Source: Table B-2

## The Time Pattern

Chart 2 presents the quarterly series of firm disappearances by merger from 1898 through 1920. It suggests a division into three subperiods, each characterized by the predominant nature of its merger activity:

| *Subperiod* | *Description* |
|---|---|
| 1895–1904 | Turn-of-the-century merger wave |
| 1905–1914 | Decade of low merger activity |
| 1915–1920 | Expansion of merger activity |

Patterns of change during the several periods appear as follows.

### 1895–1904

In this ten-year period the average number of firms disappearing annually was 301. Five of these years, 1898–1902, saw a burst of merger activity never exceeded in importance in our history, with 1,028 firms disappearing into mergers in 1899 alone. The huge turn-of-the-century merger wave produced U.S. Steel, American Tobacco, International Harvester, Du Pont, Corn Products, Anaconda Copper, and American Smelting and Refining, to name only a few. Its effect on American industry was widespread and enduring.

There had been a smaller cycle of merger activity in 1888–1893, followed by a virtual suspension of mergers for several years. The new cycle began in 1895 at a level of merger activity so low that it has never again been reached. The merger wave ebbed during 1903 and 1904, and reached its lowest point in the third quarter of 1904.

Superimposed upon the ten-year wave were two subcycles of merger activity. The first had its initial trough in 1896, its peak in 1899, and its terminal trough in 1900. The second had its initial trough in 1900, its peak in 1901, and its terminal trough in 1904. In a sense the reduced activity of 1900 represents merely an interruption midway in the huge 1898–1902 merger wave, rather than a cyclical trough. Since underlying series in production and stock prices dipped in 1900, the interruption may also be in part related to the business cycle.

### 1905–1914

The second period was distinguished by the absence of any strong burst of merger activity. A yearly average of 100 firms disappeared into mergers, the total for the decade being less than that for the year 1899. This is not to say that no important mergers

occurred between 1905 and 1914, a period which saw the formation of General Motors in 1908, Computing-Tabulating-Recording (later International Business Machines) in 1911, and Aetna Explosives in 1914. Nevertheless, general merger activity was at a low ebb; in only one year (1905) did firm disappearances into mergers reach more than 150.

Two cycles are observed in this period of low merger activity. The first had its initial trough in 1904, its peak in 1905, and its terminal trough in 1908; the second had its initial trough in 1908, its peak in 1910, and its terminal trough in 1914. In both, the expansion interval was shorter than the contraction interval, inviting the interpretation of this period as an extension of the declining phase of the huge turn-of-the-century merger wave. However, the variety of legal and economic factors responsible for the sharp contraction of merger activity from 1902 to 1904 strongly suggests that the period following 1904 was fundamentally different from the huge turn-of-the-century merger wave.

### 1915–1920

In this six-year period firms disappeared into mergers at an average rate of 139 per year, much lower than the 301 yearly average of 1895–1904, but well over the 100 yearly average of 1905–1914. It is probably fair to describe this as the initial phase of the higher merger activity that was to characterize the 1920's. By 1917 the number of firm disappearances by merger had reached 195, a level equal to that of 1919 and 1920, and not exceeded since 1905.

This period also saw the first recurrence of the very large consolidation since the early merger wave of 1898–1902. After the U.S. Steel consolidation of April 1901 there was none larger than $136.5 million until 1917 when the $283 million Union Carbide and Carbon consolidation was formed. This was followed in 1919 by the $198 million Transcontinental Oil consolidation, and in 1920 by the $283 million Allied Chemical and Dye consolidation.

The series of cycles in merger activity continued in the third subperiod. In this short span (six years), only one full cycle was observed, with its initial trough in 1914, its peak in 1917, and its terminal trough in 1918. The expansion interval was longer than the contraction, suggesting that the cycle may have been superimposed on a general upswing of merger activity. The suggestion is strengthened by contrast with the reverse expansion-contraction interval patterns observed in the three preceding merger cycles of 1900–1904, 1904–1908, and 1908–1914, all of which were

superimposed on either a general downswing or a sustained period of low merger activity.

### FIRM DISAPPEARANCES AND MERGER CAPITALIZATIONS

The magnitude of merger activity can be described in two ways: first, in terms of the net number of firms disappearing because of merger, i.e. the net reduction in the business population due to mergers;[1] second, in terms of the sum of the sizes of firms disappearing into mergers. The measure of firm size used in this study is the capitalization of the mergers; hence the name *merger capitalizations.*[2]

A division of the period into subperiods on the basis of adjusted merger capitalizations gives essentially the same breakdown as that based on firm disappearances, as Table 14 shows. The only major exception is that in the third subperiod (1915–1920) the absolute level of capitalizations of the first period had been almost regained. This rise in merger capitalizations relative to disappearances was mainly due to a rise in capital prices, and not to a strongly discernible increase in the real size of firms entering mergers. Both annual series exhibit very high activity at the turn of the century, followed after 1904 by a decade of relatively low activity and, in the last six years of the period, a revival of merger activity. The two series also exhibit a high degree of conformity in their cycles of merger activity (Table 15).

These findings are probably what would be expected. With the data in annual form, relieved of the irregularities found in shorter time units, there should be relatively little divergence between the disappearances and capitalizations series. We might expect the divergence to be greater during periods of generally low merger activity, when a few large mergers might more easily dominate the capitalizations series. This may explain the divergence of the two sets of peak year dates (1905 and 1906, 1910 and 1912) during the decade of low merger activity, 1905–1914.

### SPREAD OF CHANGES IN MERGER ACTIVITY AMONG INDUSTRIES

A supplementary indication of the magnitude of merger activity in any given period of time is the industrial representation of

[1] If, for example, ten firms enter into a consolidation, the gross number of firms disappearing is ten, but the net decrease in the business population as the result of the consolidation is nine. Adjustment for net disappearances puts all the lists on the same standard of comparison, i.e., the decline in business population resulting from the consolidations. Thus the distortion of comparisons of data containing both disappearances of old independent firms and appearances of new consolidated companies is avoided by using net data.

[2] The basic data were the authorized capitalizations of consolidations which were written up (adjusted) at the product-group and industry level by the estimated sizes of firms disappearing by acquisition. For a detailed description of this process see Chapter 2.

TABLE 14
Firm Disappearances by Merger and Merger Capitalizations, 1895–1920

| Year | Firm Disappearances by Merger | Merger Capitalizations (millions of dollars) |
|---|---|---|
| 1895 | 43 | 40.8 |
| 1896 | 26 | 24.7 |
| 1897 | 69 | 119.7 |
| 1898 | 303 | 650.6 |
| 1899 | 1,208 | 2,262.7 |
| 1900 | 340 | 442.4 |
| 1901 | 423 | 2,052.9 |
| 1902 | 379 | 910.8 |
| 1903 | 142 | 297.6 |
| 1904 | 79 | 110.5 |
| 1905 | 226 | 243.0 |
| 1906 | 128 | 377.8 |
| 1907 | 87 | 184.8 |
| 1908 | 50 | 187.6 |
| 1909 | 49 | 89.1 |
| 1910 | 142 | 257.0 |
| 1911 | 103 | 210.5 |
| 1912 | 82 | 322.4 |
| 1913 | 85 | 175.6 |
| 1914 | 39 | 159.6 |
| 1915 | 71 | 158.4 |
| 1916 | 117 | 470.0 |
| 1917 | 195 | 678.7 |
| 1918 | 71 | 254.2 |
| 1919 | 171 | 981.7 |
| 1920 | 206 | 1,088.6 |
| AVERAGE ANNUAL MERGER ACTIVITY | | |
| 1895–1904 | 301.2 | 691.3 |
| 1905–1914 | 100.1 | 220.7 |
| 1915–1920 | 138.5 | 605.3 |
| 1895–1920 | 186.3 | 490.4 |

Source: Tables B-3 and B-7.

TABLE 15
Trough and Peak Years of Merger Cycles, 1895–1920

| Trough Years | | Peak Years | |
|---|---|---|---|
| Disappearances | Capitalizations | Disappearances | Capitalizations |
| 1896 | 1896 | 1899 | 1899 |
| 1900 | 1900 | 1901 | 1901 |
| 1904 | 1904 | 1905 | 1906 |
| 1909 | 1909 | 1910 | 1912 |
| 1914 | 1914 or 1915 | 1917 | 1917 |
| 1918 | 1918 | | |

Source: Table 14.

changes in its merger activity as compared with the period preceding it. If, between two successive periods of time, merger activity in a number of different industries changes in the same direction, we have a sound basis for characterizing the more active period as what is usually called a *merger movement*. If the aggregate volume of merger activity increases because of disproportionately large increases in a few industries, the characterization of the over-all change as a merger movement may be unwarranted.

The average annual merger activity of twenty-seven Standard Industrial Classification two-digit manufacturing and mining industries for the three subperiods was computed. The twenty-seven two-digit classes include twenty-one manufacturing classes and four mining classes; two additional classes defied assignment—ice, including both natural and manufactured ice production, and a heterogeneous group of industries containing elements of both manufacturing and mining.[3]

The changes in their average annual merger activity between the three subperiods 1895–1904, 1905–1914, and 1915–1920 are summarized in Table 16. Between 1895–1904 and 1905–1914 the average annual merger activity declined in twenty-four of the twenty-seven two-digit industries as measured by disappearances, and in twenty-three of them as measured by capitalizations. The decline was greater than 40 per cent in nineteen of the twenty-seven industries for disappearances and in seventeen for capitalizations. The upswing in merger activity between 1905–1914 and 1915–1920 was not nearly so widespread as the downswing between 1895–1904 and 1905–1914 had been. Hardly more than half of the twenty-seven industries—that is, fifteen or sixteen, as measured by disappearances or by capitalizations—experienced an increase in merger activity. The growth, while not widespread, was notable for the important industries which spearheaded it. Of the nine two-digit industries having an increase greater than 100 per cent in average annual merger capitalizations, six were large industries in which mergers played an important role (Table 17).

## SUMMARY

The breakdown of the twenty-six-year period into three distinct parts seems justified. The three subperiods exhibit different levels of merger activity, each encompasses an integral number of cycles of merger activity, and the variations in merger activity among periods have distinct industrial compositions. The findings above tend to confirm, and to show more accurately, what has been agreed

[3] For a listing of the industries, see note to Table 19.

about the time pattern of mergers in this period—that the turn-of-the-century merger wave was large and important, and that it was followed by a protracted period of low merger activity.

TABLE 16

Interperiod Changes in Average Annual Merger Activity for Twenty-Seven Two-Digit Industry Classes, 1895–1920
(*number of industries in indicated categories of increase or decrease in firm disappearances and merger capitalizations*)

| | *Disappearances* | *Capitalizations* |
|---|---|---|
| BETWEEN 1895–1904 AND 1905–1914 | | |
| Increase | 3 | 4 |
| Decrease | | |
| 0–40% | 5 | 6 |
| 40–80% | 12 | 13 |
| Over 80% | 7 | 4 |
| BETWEEN 1905–1914 AND 1915–1920 | | |
| Increase | | |
| Over 100% | 8 | 9 |
| 50–100% | 4 | 2 |
| 0–50% | 3 | 5 |
| Decrease | | |
| 0–50% | 5 | 6 |
| 50–100% | 7 | 5 |

Source: Appendix B.

TABLE 17

Merger Growth from 1905–1914 to 1915–1920 of Six Leading 1915–1920 Merger Industries

| *Industry* | *Percentage Growth of Average Annual Merger Capitalizations* | *Rank Among 27 Industries by 1915–1920 Merger Capitalizations*[a] |
|---|---|---|
| Petroleum products (29) | +2177.7 | 1 |
| Chemicals (28) | +1271.6 | 2 |
| Primary metals (33) | +104.4 | 3 |
| Transportation equipment (37) | +364.7 | 4 |
| Petroleum & gas extraction (13) | +919.6 | 7 |
| Metal products (34) | +264.7 | 8 |

Numbers in parentheses following names of industries denote SIC numbers in this and the following tables.

[a] That is, by absolute annual averages.

Source: Appendix B.

An unexpected finding is that merger activity began to recover in the years preceding the entrance of the United States into

World War I. Because the previously existing comprehensive series of mergers began no earlier than 1919, they left uncertain whether the early twenties saw the first instance of a major revival of merger activity since the turn of the century. The findings of this study place the upswing as early as 1916–1917. To the degree that this dating is correct, the second great merger movement in the United States is seen to be not strictly a creature of the "roaring twenties" but a longer-run phenomenon originating considerably earlier.

## *Industrial Composition*

One of the features of the 1895–1920 period was the participation in mergers of virtually all of the manufacturing and mining industries. This study records mergers in all of the twenty-one two-digit manufacturing industries and in four of the five two-digit mining industries, the one exception being anthracite coal mining (11). Although there were numerous indirect indications of mergers in anthracite coal, acquisitions by certain railroads dominated the merger picture in this industry. Examination of anthracite coal mergers would, therefore, have entailed a separate study of railroads, which was outside the scope of the study. It might also be noted that the anthracite coal industry was almost the classical example of the use of the "gentlemen's agreement" in organizing an industry.[4]

Merger activity was found not only in nearly all manufacturing and mining industries for the whole twenty-six-year period, but the industrial representation was complete also for the three subperiods, with one exception, ordnance (19) in the period 1905–1915. In only nineteen of the eighty-one subperiod industry categories were fewer than ten firm disappearances recorded. The industrial composition was by no means uniform, however, some industries experiencing a very large amount of merger activity and others very little. Nor was the industrial composition constant over time. The purpose of the following section is to describe this heterogeneous and changing industrial pattern of mergers.

### MANUFACTURING AND MINING

The two industry groups studied, manufacturing and mining, differed in terms of gainful workers employed and of realized private production income: manufacturing was seven to eight times as large as mining. Approximately the same proportion was

[4] On this, see Eliot Jones, *The Anthracite Coal Combination in the United States*, Harvard University Press, 1914.

found also between total merger capitalizations in manufacturing and in mining. This measure, given in Table 18, indicates that mergers played roles of roughly the same importance in both manufacturing and mining.

Within the twenty-six-year period, there were substantial changes in the relative shares of manufacturing and mining in merger activity. This pattern is also seen in Table 18. Manufactur-

TABLE 18

Distribution of 1895–1920 Merger Activity Between Manufacturing and Mining
(*per cent*)

| | *Net Firm Disappearances by Merger* | | | *Merger Capitalizations* | | |
|---|---|---|---|---|---|---|
| *Period* | *Manufacturing* | *Mining* | *Not allocable* | *Manufacturing* | *Mining* | *Not allocable* |
| 1895–1920 | 78.9 | 17.4 | 3.7 | 87.6 | 10.7 | 1.8 |
| 1895–1904 | 81.2 | 15.8 | 3.0 | 90.7 | 7.4 | 2.0 |
| 1905–1914 | 67.3 | 25.3 | 7.4 | 74.1 | 22.5 | 3.5 |
| 1915–1920 | 84.7 | 13.6 | 1.7 | 89.6 | 9.9 | 0.5 |

Detail may not add to totals because of rounding.

ing dominated the merger activity of the first and third subperiods, accounting for four-fifths or more of firm disappearances and nine-tenths of merger capitalizations in both 1895–1904 and 1915–1920. In the middle period, 1905–1914, however, mining accounted for approximately one-fourth of merger activity, partly because of the persistence of mergers in bituminous coal after the large 1898–1902 wave. In the decade 1905–1914 the bituminous coal industry accounted for a greater number of firm disappearances into mergers than any other two-digit manufacturing or mining industry. It moved from eighth place in 1895–1904 to fourth place in 1905–1914 among the twenty-seven industries in size of merger capitalizations. The persistence of mergers in metal mining also contributed to the increasing importance of mining mergers in the 1905–1914 decade. In terms of firm disappearances, metal mining rose from fifteenth to ninth place among the twenty-seven industries between 1895–1904 and 1905–1914, and from tenth to third place in terms of merger capitalizations.

### DISTRIBUTION BY INDUSTRY, AND ITS CHANGES

The distribution of 1895–1920 merger activity among the twenty-seven two-digit industries is presented in Table 19. Though merger activity was found in all twenty-seven two-digit industries,

TABLE 19

Distribution of 1895–1920 Merger Activity in Manufacturing and Mining by Two-Digit Industry Classes

| *Industry* | *Firm Disappearances by Merger* | *Merger Capitalizations* (millions of dollars) |
|---|---|---|
| Ordnance (19) | 18 | 57.8 |
| Food and kindred products (20) | 758 | 1,231.1 |
| Tobacco products (21) | 180 | 412.9 |
| Textiles (22) | 167 | 403.3 |
| Apparel (23) | 5 | 12.0 |
| Lumber, wood products (except 25) (24) | 48 | 54.4 |
| Furniture, fixtures (25) | 36 | 26.2 |
| Paper and allied products (26) | 155 | 192.2 |
| Printing, publishing (27) | 18 | 37.9 |
| Chemicals (28) | 360 | 1,032.7 |
| Petroleum products (29) | 170 | 1,038.8 |
| Rubber products (30) | 36 | 162.5 |
| Leather and products (31) | 38 | 81.1 |
| Stone, clay, glass products (32) | 226 | 211.2 |
| Primary metals (33) | 634 | 3,852.1 |
| Metal products (except 19, 35, 37) (34) | 269 | 482.4 |
| Machinery (except 36) (35) | 263 | 638.9 |
| Electrical machinery, etc. (36) | 63 | 139.4 |
| Transportation equipment (37) | 270 | 940.8 |
| Instruments, optical goods, etc. (38) | 30 | 46.0 |
| Miscellaneous manufacturing (39) | 79 | 104.3 |
| Metal mining (10) | 111 | 441.2 |
| Bituminous coal mining (12) | 573 | 615.9 |
| Petroleum and gas extraction (13) | 99 | 210.5 |
| Nonmetallic minerals mining (14) | 119 | 95.9 |
| Ice, natural and manufactured | 122 | 156.9 |
| Not allocable | 57 | 73.1 |
| All manufacturing (19–39) | 3,823 | 11,167.8 |
| All mining (10, 12–14) | 842 | 1,363.6 |
| Other | 179 | 230.0 |
| Total | 4,844 | 12,752.4 |

Source: Appendix B.

The abbreviated form in which the industry classifications are given does not signify any difference in coverage from the classifications given in the SIC *Manual*. The titles given there are:

*Manufacturing*

19. Ordnance and accessories.
20. Food and kindred products.
21. Tobacco manufactures.
22. Textile mill products.
23. Apparel and other finished products made from fabrics and similar materials.
24. Lumber and wood products, except furniture.
25. Furniture and fixtures.
26. Paper and allied products.

*Manufacturing (continued)*

27. Printing, publishing, and allied industries.
28. Chemicals and allied products.
29. Products of petroleum and coal.
30. Rubber products.
31. Leather and leather products.
32. Stone, clay and glass products.
33. Primary metal industries.
34. Fabricated metal products, except ordnance, machinery, and transportation equipment.
35. Machinery, except electrical.
36. Electrical machinery, equipment, and supplies.
37. Transportation equipment.
38. Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks.
39. Miscellaneous manufacturing industries.

*Mining*

10. Metal mining.
12. Bituminous coal and lignite mining.
13. Crude petroleum and natural gas extraction.
14. Mining and quarrying of nonmetallic minerals, except fuels.

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the great majority of merger activity occurred in eight industries: food and kindred products (20), chemical and allied products (28), petroleum products (29), primary metals (33), metal products (34), nonelectrical machinery (35), transportation equipment (37), and bituminous coal mining (12). The eight industries accounted for 68.2 per cent of 1895–1920 firm disappearances by merger and for 77.1 per cent of merger capitalizations. Among them, the first four groups—food, chemicals, petroleum products, and primary metals—accounted for 39.8 per cent of firm disappearances and 56.1 per cent of merger capitalizations. Primary metals alone accounted for 13.1 per cent of firm disappearances and for 30.2 per cent of merger capitalizations.

Within the twenty-six-year period 1895–1920 there were numerous shifts in the share of merger activity among the twenty-seven two-digit industries. These reflected the important and complex changes in the pattern of industry in this period, particularly the over-all growth of industry, and the differential participation in this growth by individual industries.[5] For example, the output of the petroleum and coal products industry (29) grew 282 per cent between 1904 and 1919, and petroleum products ranked first in the volume of 1915–1920 merger capitalizations. The output of leather products increased only 22 per cent and leather products ranked twenty-first in 1915–1920 merger capitalizations. Also

[5] Solomon Fabricant, *The Output of Manufacturing Industries, 1899–1937*, National Bureau of Economic Research, 1940, Table 1, p. 44; Table 5, pp. 60–61.

important were the increasing average size of industrial firms, and, especially, changes in the size-distribution of firms generally and in specific industries. Between 1914 and 1919 the average number of wage earners per establishment in chemicals and allied products (28) increased 44 per cent, while that in lumber and its products (24) increased only 6.1 per cent.[6] Chemicals ranked second in 1915–1920 merger capitalizations, while lumber products ranked twenty-fourth. Probably important also, in certain industries, was previous merger activity which, by the level of concentration achieved, had effectively limited subsequent merger activity over an extended period of time. For example, the reappearance of large merger activity in petroleum products after the pre-1895 monopolization by the Standard Oil trust may have had to await both the substantial growth of the industry and the 1911 dissolution of the Standard Oil Company.

In view of this changing pattern of industry it is not surprising that the industrial composition of merger activity underwent a large change over this period. This shift is indicated in Table 20, in which the twenty-seven manufacturing and mining industries are ranked by size of merger activity for the three subperiods and for the full twenty-six-year period.

The table shows that there was probably a greater shift of ranks from 1905–1914 to 1915–1920 than from 1895–1904 to 1905–1914.[7] This finding is consistent with the hypothesis, suggested above, that changes in the composition of merger activity tend to reflect differential changes in industry growth rates. Arthur F. Burns found that the decade 1905–1915 was one of widespread retardation in growth in industry.[8] As such it was probably not a propitious time for large changes in the industrial composition of merger activity. There was a substantial increase in the number of industries showing large growth rates in the period 1915–1920, however, and this may be reflected in the somewhat greater change in the industrial composition of merger activity between 1905–1914 and 1915–1920.

[6] Willard L. Thorp, *The Integration of Industrial Operations*, Census Monograph III, 1924, Table 9, p. 41.

[7] The lower the correlation between ranks, the greater the shift in ranks between two periods. Statistical tests of the significance of the difference between correlation coefficients gave the following results: For the disappearances data, there was no significant difference between the changes of ranks from first to second periods and the changes from second to third periods. For the more meaningful capitalizations data, the difference bordered on the statistically significant. We would expect such a large difference to be due to chance in only one of twelve samples. All four rank correlation coefficients are significantly greater than zero at the 1 per cent level of significance.

[8] Arthur F. Burns, *Production Trends in the United States since 1870*, National Bureau of Economic Research, 1934, Table 13, p. 81; see also Table 41 in Chapter 4 below.

TABLE 20

Industrial Composition of 1895–1920 Merger Activity: Rankings for Twenty-Seven Two-Digit Industries

| Industry | Merger Capitalizations | | | | Firm Disappearances by Merger | | | |
|---|---|---|---|---|---|---|---|---|
| | 1895–1920 | 1895–1904 | 1905–1914 | 1915–1920 | 1895–1920 | 1895–1904 | 1905–1914 | 1915–1920 |
| Primary metals (33) | 1 | 1 | 1 | 3 | 2 | 2 | 3 | 4 |
| Food and kindred products (20) | 2 | 2 | 2 | 5 | 1 | 1 | 2 | 3 |
| Petroleum products (29) | 3 | 16 | 10 | 1 | 10 | 20 | 13 | 1 |
| Chemicals (28) | 4 | 6 | 8 | 2 | 4 | 4 | 5 | 5 |
| Transportation equipment (37) | 5 | 3 | 6 | 4 | 5 | 9 | 7 | 2 |
| Machinery (except 36) (35) | 6 | 4 | 5 | 10 | 7 | 7 | 4 | 9 |
| Bituminous coal mining (12) | 7 | 8 | 4 | 6 | 3 | 3 | 1 | 10 |
| Metal products (except 19, 35, 37) (34) | 8 | 7 | 11 | 8 | 6 | 6 | 10 | 6 |
| Metal mining (10) | 9 | 10 | 3 | 17 | 15 | 15 | 9 | 13 |
| Tobacco products (21) | 10 | 5 | 9 | 14 | 9 | 8 | 11 | 16 |
| Textiles (22) | 11 | 9 | 7 | 9 | 11 | 12 | 8 | 8 |
| Petroleum and gas extraction (13) | 12 | 19 | 19 | 7 | 16 | 16.5 | 15.5 | 7 |
| Stone, clay, glass products (32) | 13 | 12 | 22 | 11 | 8 | 5 | 19.5 | 12 |
| Paper and allied products (26) | 14 | 11 | 25 | 15 | 12 | 10 | 24 | 11 |
| Rubber products (30) | 15 | 14 | 12 | 16 | 22.5 | 24 | 15.5 | 18 |
| Ice, natural and manufactured | 16 | 13 | 13 | 19 | 13 | 14 | 6 | 17 |
| Electrical machinery, etc. (36) | 17 | 15 | 17 | 13 | 18 | 19 | 22.5 | 14 |
| Miscellaneous manufacturing (39) | 18 | 17 | 15 | 26 | 17 | 13 | 21 | 20 |
| Nonmetallic minerals mining[a] (14) | 19 | 22 | 14 | 18 | 14 | 11 | 12 | 19 |
| Leather and products (31) | 20 | 20 | 16 | 21 | 21 | 23 | 17.5 | 21 |
| Nonallocable | 21 | 18 | 20 | 27 | 19 | 16.5 | 14 | 22.5 |
| Ordnance (19) | 22 | 26 | 27 | 12 | 25.5 | 26.5 | 27 | 15 |
| Lumber, wood products (except 25) (24) | 23 | 21 | 18 | 24 | 20 | 18 | 17.5 | 27 |
| Instruments, optical goods, etc. (38) | 24 | 23 | 21 | 22 | 24 | 22 | 25 | 22.5 |
| Printing, publishing (27) | 25 | 25 | 23 | 20 | 25.5 | 25 | 19.5 | 25 |
| Furniture, fixtures (25) | 26 | 24 | 26 | 23 | 22.5 | 21 | 22.5 | 25 |
| Apparel (23) | 27 | 27 | 24 | 25 | 27 | 26.5 | 26 | 25 |

Rank correlations (Spearman) for industrial distribution of merger activity 1895–1920, between subperiods

| Period Compared | Measure of Merger Activity | |
|---|---|---|
| | Disappearances | Capitalizations |
| 1895–1904 and 1905–1914 | +0.742 | +0.825 |
| 1905–1914 and 1915–1920 | +0.620 | +0.587 |

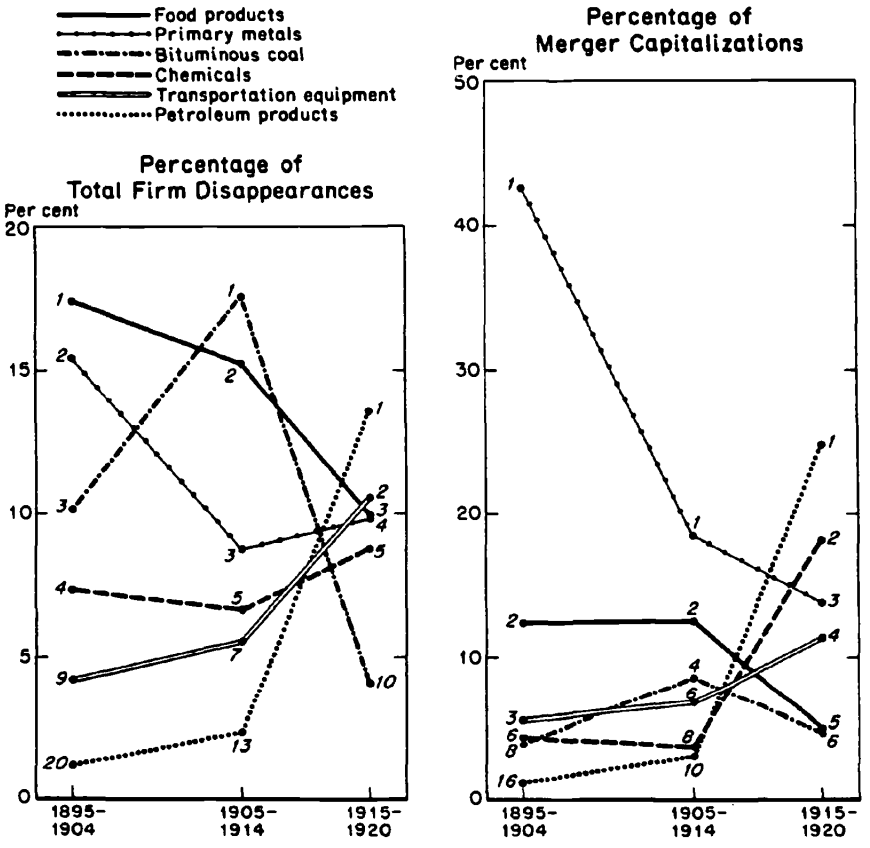
Source: Appendix B.

The shifts among leading merger industries (Chart 3) tend to support the hypothesis. The three industries growing in merger importance after 1914—transportation equipment (mainly automobiles, trucks, and parts), chemicals, and petroleum products—were industries that experienced large rates of growth, with large increases in both the number and size of firms.

CHART 3

Shares of Total Merger Activity of Leading Merger Industries, by Subperiod, 1895–1920

Numbers in italics indicate rank of given industry in volume of merger activity among twenty-seven two-digit manufacturing and mining industries.



INTRAINDUSTRY PATTERNS

If changes in the composition of merger activity were examined, using finer (three-digit) levels of industry classification, there would perforce be a greater number of shifts in rank than at the two-digit level. The following brief sections summarize changes among three-digit classes for four important two-digit industries—food products, chemicals, primary metals (manufacturing and mining), and transportation equipment. This material reveals that the rise through merger of single large enterprises and changes in the product makeup of enterprises were important factors in the shifting industrial composition of merger activity at the finer levels of classification.

*Food Products.* The most striking shift in merger activity in the food products industry was the decline in the beverages group, shown in Table 21. Led by brewery and distillery mergers, bever-

TABLE 21

Distribution of Merger Activity among Product Groups within the Food Products Industry, 1895–1920

| *Product Group* | *Percentage of Merger Capitalizations* | | |
|---|---|---|---|
| | *1895–1904* | *1905–1914* | *1915–1920* |
| Meat products (201) | 9 | 17 | 39 |
| Dairy products (202) | 1 | 2 | 9 |
| Canning and preserving (203) | 7 | 2 | 28 |
| Grain mill products (204) | 5 | 1 | 5 |
| Bakery products (205) | 8 | 25 | 2 |
| Sugar (206) | 13 | 12 | 9 |
| Confectionery (207) | 3 | 2 | 2 |
| Beverages (208) | 37 | 10 | 0 |
| Miscellaneous (209) | 16 | 30 | 6 |
| | 100 | 100 | 100 |
| Average annual merger capitalizations (thousands of dollars) | 78,229 | 27,643 | 29,562 |

Detail may not add to totals because of rounding.
Source: Worksheets.

ages predominated in merger activity during the first wave, and then their participation declined to only a fraction of one per cent of food products mergers in the period 1915–1920. Passage of the Eighteenth Amendment in 1919 contributed to lowering that share; but the substantial decline from 1895–1904 to 1905–1914 indicates that merger activity in beverages had begun to drop off

well before Prohibition. The decline was probably the result of very intensive merger activity before 1904. By 1904 Distillers Securities, successor to the Distilling Company of America, had achieved a commanding position in the liquor market, and the major problem facing the company was to integrate its far-flung empire of small and large distilleries. Its post-1904 activity seemed to revolve around attempts to sell off its small distilleries and to consolidate operations in the larger ones. It was eventually forced to sell a large Peoria distillery, and it was continually beset by new competition, which it tried to forestall through trade agreements rather than by merger.

*Chemicals.* The most conspicuous development in mergers of chemical firms was the emergence of the multiproduct merger in the last six years of the period 1895–1920. This appears in Table 22 in the "not elsewhere classified" category to which were assigned

TABLE 22

Distribution of Merger Activity among Product Groups within Chemicals and Allied Products, 1895–1920

| *Product group* | *Percentage of Merger Capitalizations* | | |
|---|---|---|---|
| | *1895–1904* | *1905–1914* | *1915–1920* |
| Industrial organic chemicals (mainly explosives) (282) | 4 | 21 | 6 |
| Paints and varnishes (285) | 9 | 13 | 7 |
| Fertilizers (287) | 22 | 49 | 1 |
| Vegetable and animal fats (288) | 28 | 5 | 1 |
| Not elsewhere classified | 9 | 1 | 83 |
| All other | 28 | 11 | 2 |
| | 100 | 100 | 100 |
| Average annual merger capitalizations (thousands of dollars) | 29,294 | 8,018 | 109,912 |

Detail may not add to totals because of rounding.
Source: Worksheets.

mergers of firms each producing products found in different three-digit categories. It includes the very large consolidations of Union Carbide and Carbon (1917) and Allied Chemical & Dye (1920). It also includes acquisitions by Du Pont of celluloid, synthetic fabrics, and paint firms after the dissolution of the explosives company in 1911.

The consolidation form of merger played a leading role in the chemicals industry.[9] One-sixth of its total merger capitalizations of

[9] The one great exception is the pre-1911 activities of the then explosives company, DuPont, which acquired most of its competitors, one at a time, over an extended span of years.

1905–1914 was accounted for by the 1914 consolidation of several independent powder companies, former Du Pont subsidiaries, into the $12.5 million Aetna Explosives Company. A single consolidation also accounted for the increase in the share of fertilizers in chemical mergers in 1905–1914: the $24 million International Agricultural Corporation, a 1909 consolidation of nine phosphate companies, alone accounted for 30 per cent of total 1905–1914 chemical merger capitalizations. The American Linseed consolidations of 1898 accounted for about one-fifth of the chemical merger capitalizations of 1895–1904, and for about three-fourths of the total for vegetable and animal oil mergers in the same period. Table 23 shows the prominent role of consolidations in chemical mergers, in comparison to the merger movement in general.

TABLE 23

Consolidation Capitalizations as Percentage of Merger Capitalization, Chemicals and All Manufacturing, 1895–1920

| | *1895–1904* | *1905–1914* | *1915–1920* | *1895–1920* |
|---|---|---|---|---|
| All manufacturing | 88 | 50 | 54 | 73 |
| Chemicals | 81 | 67 | 85 | 83 |

*Primary Metals.* Shifts in the relative size of merger activity between iron and steel and nonferrous metals mergers are presented in Table 24. Manufacturing and mining are combined in both industry categories to eliminate any bias in the data due to different degrees of vertical integration among firms in the two industries.[10] Nonferrous merger activity continued at a fairly high level after the large turn-of-the-century wave, while iron and steel mergers dropped off sharply. This persistence of merger activity in nonferrous metals in 1905–1914 was a major cause of the increased share of mining versus manufacturing in merger activity at that time (Table 18). Then, as merger activity in general recovered after 1914, nonferrous activity declined substantially, while iron and steel mergers staged a vigorous comeback.

[10] This bias arises from the arbitrary convention adopted for this study by which a mixed manufacturing-mining merger is assigned to the industry group apparently representing the greater amount of its activity. In the two industries discussed here the convention leads to an overstatement of iron and steel *manufacturing* mergers relative to those in nonferrous metals, and conversely to an overstatement of nonferrous *mining* mergers relative to those in iron and steel. In particular, only eight disappearances are assigned to the iron ore mining category, while ninety-nine are assigned to the nonferrous mining category. All vertical (mine plus mill) iron and steel mergers were placed in manufacturing, as the blast furnace steel mill function was judged to be the major activity; only some of the vertical nonferrous mergers were so judged.

TABLE 24

Relative Merger Activity in Ferrous and Nonferrous Metals Industries, 1895–1920

| *Industry* | *Average Annual Merger Capitalizations* (thousands of dollars) | | |
|---|---|---|---|
| | *1895–1904* | *1905–1914* | *1915–1920* |
| Iron and steel (331, 332, 101) | 257,234 | 26,324 | 61,687 |
| Nonferrous (333–336, 102–106) | 51,173 | 37,754 | 20,545 |
| Ratio: iron and steel to nonferrous | 5.0 | 0.7 | 3.0 |

Source: Appendix B and worksheets.

*Transportation Equipment.* The shift in transportation equipment mergers from railroad equipment to motor vehicles between 1895–1904 and 1915–1920 is clearly seen in Table 25. Railroad equipment mergers led the first decade of the twenty-six-year period, accounting for more than two-thirds of merger activity in the industry. Motor vehicles, however, played the principal role thereafter, accounting for five-sixths of the industry's mergers in the second subperiod, and for three-fourths in the third.

TABLE 25

Distribution of Merger Activity among Product Groups within Transportation Equipment, 1895–1920

| *Product Group* | *Percentage of Merger Capitalizations* | | |
|---|---|---|---|
| | *1895–1904* | *1905–1914* | *1915–1920* |
| Motor vehicles and equipment (371) | 12 | 85 | 77 |
| Aircraft and parts (372) | | | 3 |
| Shipbuilding and repairing (373) | 11 | 8 | 8 |
| Railroad equipment (374) | 69 | 7 | 3 |
| Motorcycles, bicycles and parts (275) | 8 | | |
| Not elsewhere classified (379) | | | 8 |
| | 100 | 100 | 100 |
| Average annual merger capitalizations (thousands of dollars) | 37,610 | 14,906 | 70,085 |

Detail may not add to totals because of rounding.
Source: Worksheets.

The moderate decline indicated in the share of shipbuilding is probably inaccurate because the amount of shipbuilding merger activity is understated for the periods 1905–1914 and 1915–1920. Bethlehem Steel, under the leadership of Charles M. Schwab, was quite active in acquiring shipbuilding companies in the years before and early in World War I. These acquisitions have been assigned to the steel industry, under the rule of classifying a merger by the industry of greater activity.

## RELATIVE VERSUS ABSOLUTE MERGER ACTIVITY

The above comparisons deal with absolute merger activity. For many purposes of description the absolute measure is satisfactory, but for most analytical purposes it is inadequate. For example, it is useless for examining the results of mergers in terms of the achievement of high concentration of control in an industry. A very large industry may exhibit large absolute merger activity which, nevertheless, if measured relative to the size and number of firms in the industry, may be insignificant. On the other hand a small industry, while showing only moderate absolute merger activity, may undergo a major change in concentration of control as the result of its mergers.

It has not been possible to express the size of merger activity of the various industries relative to the size of the industry with any satisfactory degree of precision. The data on industry size in the first decade of our period were notable for their paucity, probable inaccuracy, and noncomparability to the size data for mergers gathered in this study. However, an attempt was made to express 1895–1907 merger activity as a percentage of industry size in 1904 for fourteen manufacturing industries for which size data roughly comparable to the merger size data were available. Comparison of absolute and relative measures of merger activity, using capitalization as the measure of firm and industry size, is presented in Table 26. Methods used in estimating relative merger activity and for making other comparisons are presented in detail in Appendix D.

The six or seven industries leading in absolute merger activity were, with one or two exceptions, also the industries leading in relative merger activity. The ranks of the leaders vis-à-vis each other, however, underwent minor shifts between absolute and relative measures of merger activity. Nevertheless, the coefficient of rank correlation between absolute and relative measures of merger activity for the fourteen industries was sufficiently high (+0.736) to encourage the assumption that high absolute merger activity was roughly indicative of high relative merger activity.

A similar assumption that the absolute number of firm disappearances could be used as a rough measure of relative merger activity is unwarranted, however. In comparisons of absolute and relative measures of merger activity based on disappearances, the correlation was much lower (+0.363).[11] This is probably to be expected, since the average firm size varies greatly among industries. For example, the highly populated food and kindred products

[11] Table D-3.

TABLE 26

Absolute and Relative Merger Activity of Fourteen Industries Measured by Capital, 1895–1907

| Industry | Absolute Merger Activity: Merger capitalizations (millions of dollars) | Absolute Merger Activity: Rank | Relative Merger Activity: Percentage | Relative Merger Activity: Rank |
|---|---|---|---|---|
| Primary metals (33) | 3,168.4 | 1 | 210.0 | 1 |
| Food and kindred products (20) | 937.8 | 2 | 39.4 | 9 |
| Machinery (except 36) (35) | 404.0 | 3 | 71.9 | 3 |
| Transportation equipment (37) | 391.0 | 4 | 75.1 | 2 |
| Tobacco products (21) | 314.3 | 5 | 47.6 | 6 |
| Chemicals (28) | 245.3 | 6 | 50.6 | 5 |
| Textiles (22) | 213.5 | 7 | 14.5 | 11 |
| Stone, clay, glass products (32) | 160.5 | 8 | 40.5 | 8 |
| Paper and allied products (26) | 157.4 | 9 | 56.7 | 4 |
| Electrical machinery, etc. (36) | 78.8 | 10 | 43.8 | 7 |
| Petroleum products (29) | 74.0 | 11 | 1.5 | 14 |
| Leather and products (31) | 45.2 | 12 | 18.6 | 10 |
| Lumber, wood products (24) and furniture, fixtures (25) | 42.3 | 13 | 8.2 | 12 |
| Printing, publishing (27) | 18.9 | 14 | 4.9 | 13 |

Source: Tables B-3 and D-1.

industry, with small average firm size, ranked first in absolute number of firm disappearances through merger, but stood twelfth out of fourteen in the relative number of disappearances. Stone, clay, and glass products, also a populous small-firm industry, ranked fourth in absolute number and ninth in relative number of disappearances.

## SUMMARY

Mergers were found in all major manufacturing and mining industries, but a disproportionate share was accounted for by a relatively few industries. The eight leading merger industries were primary metals, food products, petroleum products, chemicals, transportation equipment, fabricated metal products, machinery, and bituminous coal. Together, they accounted for 77 per cent of merger capitalizations and 68 per cent of net firm disappearances by merger during the twenty-six-year period under study.

An equally important aspect of the picture was the shift among industries in their relative shares of merger activity over the years. Petroleum products and chemicals replaced primary metals and food products as leaders in merger activity. In transportation equip-

ment, the predominant segment for merger activity during 1895–1904 was railroad equipment; during 1915–1920, motor vehicles.

The greater change in the industrial composition of merger activity came between 1905–1914 and 1915–1920, rather than between 1895–1904 and 1905–1914. The post-1914 rebirth of merger activity saw not only a growth in general activity but also the emergence of new industries to lead this growth.

### *Size Distribution*

The size distribution of 1895–1920 mergers shows a shifting pattern in which the earlier and later parts of the period are in contrast. The decade 1895–1904, containing the large turn-of-the-century merger wave, was characterized by the many-firm consolidation; the period 1915–1920 on the other hand was characterized by consolidations of few firms and by the acquisition of one firm by another. The pattern is summarized in Table 27.

TABLE 27

Distribution of Firm Disappearances by Type of Merger, 1895–1920
(*per cent*)

| | *1895–1904* | *1905–1914* | *1915–1920* |
|---|---|---|---|
| Acquisitions and consolidations of two to four firms | 25.0 | 62.3 | 86.1 |
| Consolidations of five or more firms | 75.0 | 37.7 | 13.9 |

CONSOLIDATIONS

Consolidations, taken alone, played a decreasingly important role in mergers from 1895 to 1920. Not only were there fewer consolidations per year in 1915–1920, but there were also fewer firms entering the average consolidation, as Table 28 shows. The median number of firm disappearances into consolidations declined from 5.2 in 1895–1904 to 2.7 in 1915–1920. The mean number of firm disappearances into consolidation declined from 9.0 to 3.5. Consolidations representing the simultaneous union of ten or more firms were 26.3 per cent of the total in 1895–1904, and in 1915–1920 only 1.4 per cent of all consolidations.

During the same time span, however, the average size of consolidations as measured by authorized capitalization declined only moderately if at all. The mean consolidation capitalization of 1895–1904 was $19.2 million, while that of 1915–1920 was $16.7 million (Table 29). The median size, however, increased from $6.3 million in 1895–1904 to $7.3 million in 1915–1920.

TABLE 28

Distribution of Consolidations by the Number of Firms Consolidating, 1895–1920
(*per cent*)

| *Number of Firms Consolidating* | *1895–1904* | *1905–1914* | *1915–1920* |
|---|---|---|---|
| 2 | 20.7 | 20.7 | 44.7 |
| 3 | 13.9 | 23.0 | 22.7 |
| 4 | 10.2 | 10.1 | 10.6 |
| 5–6 | 15.7 | 14.4 | 17.0 |
| 7–9 | 13.3 | 9.4 | 3.6 |
| 10–16 | 13.6 | 11.5 | 1.4 |
| 17–25 | 4.9 | 1.4 | — |
| 26–40 | 5.9 | — | — |
| 41 | 1.9 | — | — |
| Median | 5.2 | 3.2 | 2.7 |
| Mean | 9.0 | 4.9 | 3.5 |
| Average annual number of consolidations | 31.3 | 13.2 | 18.5 |
| Consolidation disappearances as percentage of all merger disappearances | 83.5 | 52.5 | 34.5 |

Source: Worksheets.

TABLE 29

Distribution of Consolidations by Authorized Capitalizations, 1895–1920
(*per cent*)

| *Authorized Capitalization*[a] (millions of dollars) | *1895–1904* | *1905–1914* | *1915–1920* |
|---|---|---|---|
| 1.0 to 1.5 | 8.0 | 7.3 | 4.6 |
| 1.5 to 2.5 | 10.6 | 11.4 | 7.3 |
| 2.5 to 3.5 | 11.3 | 10.6 | 11.9 |
| 3.5 to 6.5 | 22.9 | 22.0 | 22.9 |
| 6.5 to 13.5 | 18.6 | 30.9 | 29.4 |
| 13.5 to 36.5 | 17.3 | 13.8 | 16.5 |
| 36.5 to 63.5 | 6.0 | 3.3 | 3.7 |
| 63.5 to 136.5 | 4.7 | 0.8 | 0.9 |
| 136.5 and over | 0.7 | — | 2.8 |
| Median | $6.3 | $6.3 | $7.3 |
| Mean | $19.2 | $9.0 | $16.7 |
| Consolidation capitalizations as percentage of all merger capitalizations | 87.2 | 53.7 | 52.4 |

Detail may not add to totals because of rounding.

[a] The frequency classes were chosen so that the most common capitalizations would fall at the mid-point of the class interval, or the several most common values would be symmetrically distributed across the class interval, or both. In most cases the authorized capitalization appeared to be a convenient round number, selected by the organizers of the enterprise, and it probably exceeded the projected amount of issued capitalization by a comfortable margin.

Source: Worksheets.

It appears from comparison of Tables 28 and 29 that, although the number of firms entering the average consolidation declined, the decline was at least partly offset by an increase in the average size of firms entering consolidations. A simple arithmetic mean computed by dividing the total consolidation capitalizations of a subperiod by the gross number of firm disappearances into consolidations bears this out. The average size of firms entering 1895–1904 consolidations was $2.1 million, that of firms entering 1905–1914 consolidations was $1.8 million, and that of 1915–1920 consolidations disappearances was $4.7 million. These shifts in average disappearance size are due mainly to the presence of a few very large consolidations and to changes in the price level of capital.

To remove the influence of the few very large consolidations from our comparisons will give a clearer picture of size changes for the majority of consolidations. Accordingly Table 30 summarizes the changes in consolidation activity after omission of five very large ones: the $200 million Federal Steel consolidation of 1898 and the $1,370 million U.S. Steel consolidation of 1901, which together accounted for 26 per cent of 1895–1904 consolidation capitalizations; and three 1915–1920 consolidations—Union Carbide and Carbon, Transcontinental Oil, and Allied Chemical and Dye—with a combined capitalization of $764 millions, or 40 per cent of the total for those years. On that basis, the average size of 1895–1904 consolidation disappearances becomes $1.6 million, that for 1905–1914, $1.8 million, and that for 1915–1920, $3.0 million.

The apparent increase in the average size of 1905–1914 consolidation disappearances over the average of 1895–1904, and the apparent further increase of 1915–1920 probably result largely from increases in the price level of capital. Because the price indexes and measures of firm size are quite crude, no strong inference about size changes over the period can be made. Clearly, however, the data do not indicate any major increase in the size of consolidation disappearances in the last six years, 1915–1920.

We may then characterize the consolidation activity of 1895–1920 as follows: Consolidations predominated in the first part of the period and played a role equal to that of acquisitions in the later years. The decline in the importance of consolidations was marked not only by a decrease in their number, but also by a reduction in the number of firms entering the average consolidation. Apart from a very few large consolidations, the average real size of firms entering consolidations in 1915–1920 was not appreciably larger than in earlier years. Thus the decline in the number

TABLE 30

Breakdown of Changes in Consolidation Activity, 1895–1920

| | *Percentage Change* | |
|---|---|---|
| | *1895–1904 to 1905–1914* | *1905–1914 to 1915–1920* |
| Average annual consolidation capitalizations[a] | −73 (−80) | +60 (+168) |
| Average annual number of consolidations | −58 (−58) | +40 (+44) |
| Average dollar size of firms entering consolidations | +16 (−15) | +61 (+164) |
| Number of firms entering average consolidation | −46 (−45) | −29 (−29) |
| Average dollar size of firms entering consolidation | +16 (−15) | +61 (+164) |
| Price level of capital[b] | +14 (+17) | +48 (+48) |
| "Real" size of firms entering consolidation | + 2 (−26) | + 9 (+78) |

Figures in parentheses include the five atypical very large consolidations: Federal Steel (1898), U.S. Steel (1901), Union Carbide and Carbon (1917), Transcontinental Oil (1919), and Allied Chemical and Dye (1920). These five comprised a total of $2,334 millions or 25.4 per cent of all 1895–1920 consolidation capitalizations.

[a] The percentage change in average annual consolidation capitalization is the product of the percentage changes in average annual number of consolidations, average dollar size of entering firms, and number of firms entering average consolidation, all expressed in decimal form relative to a base of one.

[b] The Creamer index of the "price" of book value of manufacturing capital was used to deflate capitalizations. The value of the index for 1900 was 94.06; for 1909, 107.27; for 1914, 113.45; and 1919, 175.21 (1904=100). A weighted average price index was computed for 1915–1920 by weighting annual interpolations (straight line), for 1915 to 1920 by number of firm disappearances into consolidations. Its value is 158.93.

of consolidation disappearances was not offset, in any important degree, by an increase in the size of disappearing firms.

### ACQUISITIONS

The importance of acquisitions in total merger activity increased steadily from 1895 to 1920. Acquisitions accounted for 16.5 per cent of net merger disappearances in 1895–1904, 47.5 per cent in 1905–1914, and 65.5 per cent in 1915–1920. In terms of adjusted merger capitalizations the acquisition form of merger accounted for 12.8 per cent of 1895–1904 merger activity, 46.3 per cent of 1905–1914 activity, and 47.6 per cent of 1915–1920 activity. The failure of the 1915–1920 acquisition share of merger capitalizations to grow with the share of firm disappearances was due much more to the appearance of three very highly capitalized consolidations than to a decline in the size of acquisition disappearances. The size distribution of firms disappearing by acquisition is given in Table 31. Both the median and mean sizes of 1915–1920 acquisi-

TABLE 31

Size Distribution of Acquisition Disappearances, 1895–1920

| *Acquisition Size*[a] (thousands of dollars) | *Percentage of Total Number of Acquisitions Having Size Data* | | |
|---|---|---|---|
| | *1895–1904* | *1905–1914* | *1915–1920* |
| 35 to 265 | 25.7 | 21.2 | 15.7 |
| 265 to 835 | 35.5 | 28.1 | 20.5 |
| 835 to 1,165 | 14.7 | 13.3 | 10.8 |
| 1,165 to 2,835 | 13.5 | 19.7 | 21.1 |
| 2,835 to 4,165 | 2.0 | 10.8 | 12.1 |
| 4,165 to 14,165 | 6.5 | 4.9 | 15.7 |
| 14,165 to 35,835 | 1.6 | 1.5 | 4.2 |
| 35,835 and over | 0.4 | 0.5 | — |
| Median acquisition size | $655 | $830 | $1,404 |
| Mean acquisition size | $1,780 | $2,150 | $3,190 |
| Number of acquisitions having size data | 245 | 203 | 166 |
| Total number of reported acquisitions | 497 | 475 | 544 |

Detail may not add to totals because of rounding.

[a] The frequency classes were chosen so that the most common sizes would fall at the midpoint of the class interval, or the several most common values would be symmetrically distributed across the class interval, or both.

Source: Worksheets.

tions are substantially larger than those of 1895–1904 and 1905–1914. This is also seen in the proportion of acquisitions larger than $2,835 thousand. Only 10.5 per cent of 1895–1904 acquisitions were larger than $2,835 thousand, while the corresponding percentages were 17.7 for 1905–1914 and 32.0 for 1915–1920.

The greater apparent size of 1915–1920 acquisitions may be partly caused by a sampling bias. The frequency distributions of size were reported by the financial news services. The ratio of acquisitions having size data to all reported acquisitions varied presented in Table 31 are based on acquisitions for which measures over time: from 49.7 per cent in the first decade of the period to 42.7 per cent in the second, and to 30.5 per cent in the last six years. Thus the size distribution of acquisitions for 1915–1920 is based on a much smaller proportion of all reported acquisitions than those of the preceding decades.

If the acquisitions for which size data were available tended to be somewhat larger, on the average, than those having no size data, there would be an upward bias in the 1915–1920 distribution of acquisition sizes. That the bias is probably not large, however, was ascertained by the following test.

A reconstruction of the 1915–1920 distribution was carried out

by adding a number of acquisitions sufficient to equalize the coverage with that of 1895–1904. They were distributed in accordance with the straight line distribution produced by plotting the 1895–1914 distribution on double logarithmic paper.[12] The median value of this reconstructed frequency distribution is $835 thousand.

When the median size for 1915–1920 from the original and reconstructed distributions is deflated by the capital price index, contradictory indications of size trend result. The original distribution would indicate that the real acquisition sizes were about 25 per cent larger in 1915–1920 than in 1895–1914, and the reconstructed distribution would indicate that they were about 25 per cent smaller. Probably the most accurate conclusion is that the data reveal no strong trend toward either larger or smaller acquisition sizes.

SUMMARY

Examination of the size distribution of merger activity suggests that changes in the relative importance of the consolidation and acquisition forms of merger over the twenty-six-year period resulted chiefly from changes in the number of firms entering a merger rather than from changes in real firm sizes over time. The apparent changes in real firm size were the effect of a very few extremely large consolidations rather than of general shifts in firm sizes.

The decline in the relative importance of the consolidation form of merger was brought about in two ways. First, the average annual number of consolidations formed declined from 31.3 in 1895–1904 to 18.5 in 1915–1920. Second, the number of firms entering the average consolidation declined also, from 9.0 in 1895–1904 to 3.5 in 1915–1920. Acquisition disappearances, on the other hand, increased from an average of 49.7 per year in 1895–1904 to 90.7 per year in 1915–1920.

## *The Merger Process*

It is useful, for certain purposes, to distinguish between the consolidation form of merger and the acquisition form. The distinction is in part between single and multiple mergers, and in

[12] The 1895–1914 and 1915–1920 distributions were plotted on double logarithmic charts. The 1895–1920 distribution traced as a straight line for sizes above $265 thousand. The distribution of larger 1915–1920 acquisitions closely approximated that of larger 1895–1914 acquisitions. However, for 1915–1920 acquisitions below $2,835,000, the frequency fell progressively below those for 1895–1914. Accordingly, the 1915–1920 frequency classes below $2,835,000 were written up to the level that a straight line comparable to that for the 1895–1914 distribution would produce.

part between all-at-once and one-at-a-time mergers. A consolidation is the more or less simultaneous multiple-union of firms into a consolidated company, an acquisition is the taking over of one firm by another, either as an isolated action or as one of an extended series.

The economic and legal factors involved in an acquisition may be different from those involved in a consolidation. Consolidations may represent an attempt to secure a dominating market position directly, without a lengthy competitive war. A series of acquisitions, too, may represent attempts to secure market control, especially if legal restrictions or insufficient financial resources prevent consolidating a large number of firms at one time. On other grounds, a consolidation may represent the success of a promoter in convincing a number of firms to unite into a new, highly capitalized company. In such a case the psychological value of simultaneous action may be important in assuring the successful consummation of the merger. In times of less frenzied merger activity, therefore, we might expect a relative decline in the use of the consolidation form. Consolidation might be the more common form for mergers of large firms in which the organization of a new, more highly capitalized corporation may be necessary. Finally, and perhaps as important as any factor, changing fashions in the enactment and interpretation of the various states' corporation laws may cause changes in the form and timing of mergers.

The proportions of total merger activity accounted for by consolidations and acquisitions are presented in Table 32. Over the whole twenty-six-year period consolidations dominated merger activity. They accounted for more than two-thirds of the merger activity of the period, as measured by either capitalizations or firm disappearances. Within the period, however, there were large shifts in the relative shares of consolidations and acquisitions. Consolidations dominated the first decade of the period, accounting for seven-eighths of merger capitalizations and five-sixths of net firm disappearances by merger. In the second decade the role of acquisitions was almost equal to that of consolidations, the merger activity dividing 53–47 in favor of consolidations. In the final six years of the period, acquisitions dominated firm disappearances by merger, accounting for two-thirds of merger activity thus measured, but only for half of the merger capitalization total. The main reason for the different proportions shown by the two measures is the occurrence of three atypical very large consolidations in this period. Union Carbide and Carbon, Transcontinental

TABLE 32

Distribution of Merger Activity by Form of Merger, 1895–1920

| Year | Merger Capitalizations | | | Firm Disappearances | | |
|---|---|---|---|---|---|---|
| | Total (millions of dollars) | Percentage by— Consolidation | Acquisition | Total | Percentage by— Consolidation | Acquisition |
| 1895 | 40.8 | 84.6 | 15.4 | 43 | 86.1 | 13.9 |
| 1896 | 24.7 | 89.1 | 10.9 | 26 | 84.6 | 15.4 |
| 1897 | 119.7 | 92.4 | 7.6 | 69 | 89.9 | 10.1 |
| 1898 | 650.6 | 94.6 | 5.4 | 303 | 93.1 | 6.9 |
| 1899 | 2,262.7 | 92.1 | 7.9 | 1,208 | 91.7 | 8.3 |
| 1900 | 442.4 | 88.1 | 11.9 | 340 | 89.9 | 14.1 |
| 1901 | 2,052.9 | 92.4 | 7.6 | 423 | 83.2 | 16.8 |
| 1902 | 910.8 | 76.2 | 23.8 | 379 | 70.7 | 29.3 |
| 1903 | 297.6 | 49.5 | 50.5 | 142 | 39.4 | 60.6 |
| 1904 | 110.5 | 28.1 | 71.9 | 79 | 45.6 | 54.4 |
| 1905 | 243.0 | 43.4 | 56.6 | 226 | 63.7 | 36.3 |
| 1906 | 377.8 | 57.1 | 42.9 | 128 | 35.9 | 64.1 |
| 1907 | 185.8 | 36.6 | 63.4 | 97 | 50.5 | 49.5 |
| 1908 | 187.6 | 89.8 | 10.2 | 50 | 72.0 | 28.0 |
| 1909 | 89.1 | 40.4 | 59.6 | 49 | 24.5 | 75.5 |
| 1910 | 257.0 | 44.8 | 55.2 | 142 | 52.8 | 47.2 |
| 1911 | 210.5 | 76.7 | 23.3 | 103 | 67.0 | 33.0 |
| 1912 | 322.4 | 58.5 | 41.5 | 82 | 45.1 | 54.9 |
| 1913 | 175.6 | 37.5 | 62.5 | 85 | 45.9 | 54.1 |
| 1914 | 159.6 | 38.2 | 61.8 | 39 | 48.7 | 51.3 |
| 1915 | 158.4 | 46.3 | 53.7 | 71 | 42.3 | 57.7 |
| 1916 | 470.0 | 44.9 | 55.1 | 117 | 38.5 | 61.5 |
| 1917 | 678.7 | 59.1 | 40.9 | 195 | 42.1 | 57.9 |
| 1918 | 254.2 | 21.3 | 78.7 | 71 | 9.9 | 90.1 |
| 1919 | 981.7 | 61.9 | 38.1 | 171 | 43.3 | 56.7 |
| 1920 | 1,088.6 | 51.1 | 48.9 | 206 | 23.8 | 76.2 |
| 1895–1904 | 6,913.4 | 87.2 | 12.8 | 3,012 | 83.5 | 16.5 |
| 1905–1914 | 2,205.8 | 53.7 | 46.3 | 1,001 | 52.6 | 47.4 |
| 1915–1920 | 3,639.5 | 52.4 | 47.6 | 831 | 34.5 | 65.5 |
| 1895–1920 | 12,758.7 | 71.5 | 28.5 | 4,844 | 68.7 | 31.3 |

Source: Appendix B.

Oil, and Allied Chemical & Dye accounted for $764 million in capitalizations and only 9 net (12 gross) firm disappearances. If these consolidations are removed from the comparison, the share of consolidations in 1915–1920 merger capitalizations declines from 52.4 per cent to 39.7 per cent. The share of net merger disappearances declines from 34.5 to 33.9 per cent. Thus, excluding the very large consolidations, acquisitions are seen to have played the dominant role in 1915–1920 merger activity.

The role of consolidations and acquisitions varied considerably among industries. As is shown in Table 33, the share of merger capitalizations for consolidations varied from one-fifth in ordnance (19) to seven-eighths in textiles (22). In terms of firm disappearances the share of consolidations varied from one-sixth in ordnance to more than nine-tenths in furniture (25). Nor was there a very high correspondence by industry between the two measures of merger activity, capitalizations and disappearances. In fourteen of

TABLE 33

Distribution of Consolidations and Acquisitions by Industry, 1895–1920

| Industry | *Merger Capitalizations* | | | *Firm Disappearance* | | |
|---|---|---|---|---|---|---|
| | *Total* (millions of dollars) | *Percentage by—* | | | *Percentage by—* | |
| | | *Consolidation* | *Acquisition* | *Total* | *Consolidation* | *Acquisition* |
| Primary metals (33) | 3,855.5 | 74.9 | 25.1 | 634 | 67.7 | 32.3 |
| Food and kindred products (20) | 1,231.1 | 80.2 | 19.8 | 758 | 74.8 | 25.2 |
| Petroleum products (29) | 1,038.8 | 50.6 | 49.4 | 170 | 57.1 | 42.9 |
| Chemicals (28) | 1.032.5 | 83.2 | 16.8 | 360 | 56.7 | 43.3 |
| Transportation equipment (37) | 960.8 | 69.6 | 30.4 | 270 | 64.8 | 35.2 |
| Machinery (except 36) (35) | 638.9 | 72.1 | 27.9 | 263 | 59.3 | 40.7 |
| Bituminous coal mining (12) | 615.5 | 46.3 | 53.7 | 513 | 83.4 | 16.6 |
| Metal products (34) | 485.4 | 76.1 | 23.9 | 269 | 75.1 | 24.9 |
| Metal mining (10) | 441.2 | 71.5 | 28.5 | 111 | 55.9 | 44.1 |
| Tobacco products (21) | 412.9 | 62.7 | 37.3 | 180 | 31.7 | 68.3 |
| Textiles (22) | 403.3 | 88.5 | 11.5 | 167 | 69.5 | 30.5 |
| Petroleum and gas extraction (13) | 210.5 | 75.5 | 34.5 | 99 | 59.6 | 40.4 |
| Stone, clay, glass products (32) | 210.5 | 77.7 | 22.3 | 226 | 87.6 | 12.4 |
| Paper and allied products (26) | 192.2 | 82.6 | 17.4 | 155 | 75.5 | 24.5 |
| Rubber products (30) | 162.5 | 49.8 | 50.2 | 36 | 36.1 | 63.9 |
| Ice, natural and manufactured | 156.9 | 75.5 | 24.5 | 122 | 79.5 | 20.5 |
| Electrical machinery, etc. (36) | 141.4 | 72.8 | 27.2 | 63 | 60.3 | 39.7 |
| Miscellaneous manufacturing (39) | 104.3 | 67.4 | 32.6 | 79 | 70.9 | 29.1 |
| Nonmetallic minerals mining (14) | 95.9 | 76.7 | 23.3 | 119 | 87.4 | 12.6 |
| Leather and products (31) | 81.1 | 78.3 | 21.7 | 38 | 65.8 | 34.2 |
| Nonallocable | 73.1 | 65.7 | 34.3 | 57 | 43.9 | 56.1 |
| Ordnance (19) | 57.8 | 20.8 | 79.2 | 15 | 16.7 | 83.3 |
| Lumber (24) | 54.4 | 44.1 | 55.9 | 48 | 70.8 | 29.2 |
| Instruments (38) | 46.0 | 59.4 | 40.6 | 30 | 56.7 | 43.3 |
| Printing, publishing (27) | 37.9 | 78.4 | 21.6 | 18 | 77.8 | 22.2 |
| Furniture, fixtures (25) | 26.2 | 72.5 | 27.5 | 36 | 91.7 | 8.3 |
| Apparel (23) | 12.0 | 74.7 | 25.3 | 5 | 40.0 | 60.0 |
| Manufacturing | 11,165.6 | 72.9 | 27.1 | 1,270 | 66.8 | 33.2 |
| Mining | 1,363.2 | 59.5 | 40.5 | 189 | 77.6 | 22.4 |

Source: Appendix B.

the twenty-seven two-digit categories the share of consolidations (or acquisitions) in total activity as measured by capitalizations departed by more than 10 percentage points from the share as measured by disappearances. This reflects differences among industries in the composition of merger activity, in the average sizes of merging firms, and in the distribution of the activity between periods of high and low price levels.

The smaller relative role of consolidations in mining merger capitalizations contrasts with the larger role of consolidations in mining merger disappearances. In bituminous coal, consolidations commonly combined many small and medium-sized coal-mining companies while acquisitions more commonly signified the absorption of one big coal company by another. The average size of firms entering bituminous coal consolidations was $550,000, while the average size of bituminous coal acquisitions was $3·9 million. The average disappearance size for all consolidations was $2.05 million, while that for all acquisitions was $2.4 million. On the average, the number of firms entering a bituminous coal consolidation was twelve, while that for all industries was eight.

The shift toward the greater role of acquisitions in total merger activity from 1895 to 1920 was participated in by most industries, as shown in Table 34. The over-all shift was brought about by the majority of industries rather than a few leading industries. Indeed the aggregate percentage for 1915–1920 indicates that, although in two-thirds of the industries acquisitions were preponderant, the over-all totals showed a slight majority for consolidations. It follows that consolidations were still relatively important in the industries leading in merger activity.

In three of the five leading industries a larger share of merger capitalizations during 1915–1920 was accounted for by consolidations than by acquisitions. In one (petroleum products) the role of acquisitions was only slightly greater than that of consolidations. Only in primary metals were acquisitions strongly predominant over consolidations. For the five leading merger industries combined, consolidations clearly played the greater role, accounting for 57 per cent of merger capitalizations.

Size of firm, it might be expected, would be among the determinants of the merger process, with the consolidation form more common in the merger of large firms than small. It is easier to merge small firms by acquisition, as the capital required is less likely to overtax the sources of the acquiring firm. Conversely, new sources of capital may be required in merging large firms, as the capital resources of the firm initiating the merger are less likely to

suffice for financing from within the firm. This is especially true of many-firm mergers because the capital required is a function of the number of firms merging.

The data on the size of consolidations and acquisitions permit a rough test of this hypothesis. Table 35 summarizes, for two-digit industries, the average size of firms entering mergers of each type. In all three subperiods the industries in which the average

TABLE 34

Percentage Share of Consolidation Capitalizations in Total Merger Capitalizations, Twenty-Seven Industries, 1895–1920

| | *Number of Industries* | | | |
|---|---|---|---|---|
| *Percentage Share* | *1895–1904* | *1905–1914* | *1915–1920* | *1895–1920* |
| Under 25 | 1 | 3 | 9 | 1 |
| 25 to 50 | 0 | 2 | 9 | 3 |
| 50 to 75 | 6 | 10 | 7 | 13 |
| 75 and over | 20 | 12 | 2 | 10 |
| Aggregate percentage | 87.2 | 53.7 | 52.4 | 71.5 |

FIVE LEADING MERGER INDUSTRIES, 1915–1920

| *Industry* | *Consolidation Capitalizations as Percentage of Total Merger Capitalizations within the Industry* |
|---|---|
| Petroleum products | 47.8 |
| Chemicals | 86.1 |
| Primary metals | 36.7 |
| Transportation equipment | 55.0 |
| Food and kindred products | 60.1 |
| Aggregate percentage, 5 industries | 57.1 |
| All others | 39.8 |

Source: Appendix B.

TABLE 35

Relative Firm Size: Disappearances by Consolidation and by Acquisition, 1895–1920

| | *1895–1904* | *1905–1914* | *1915–1920* |
|---|---|---|---|
| Number of industries with larger average firm size for consolidations than for acquisitions | 15 | 17 | 12 |
| Industries with data available | | | |
| Number | 23 | 24 | 21 |
| Per cent | 65.2 | 70.8 | 57.1 |
| Number of firms entering average consolidation | 9.0 | 4.9 | 3.5 |

Source: Appendix B

consolidation disappearance (measured in terms of capitalizations) was larger than the average acquisition disappearance were in the majority.

In 1895–1904, consolidations dominated the merger activity of all but one of the two-digit industries, as appeared in Table 33. The union of "wholesale lots" of small firms into consolidations was as common as the union of two or several large firms into consolidations. In this period of very high merger activity, size of firm was therefore probably of less importance in determining the process of merger than in later periods of less intense activity.

SUMMARY

The huge turn-of-the-century merger wave was probably unique in the overwhelming importance of the consolidation form of merger. In neither the 1905–1914 decade of very low activity nor the 1915–1920 period of reviving merger activity did the consolidation resume this dominant role.

The rise in importance of the acquisition form of merger, though not unbroken, claimed some of the characteristics of a secular trend phenomenon. Apart from the very large consolidations which reappeared on the resumption of increased general merger activity in 1915–1920, acquisition merger activity has been a consistently growing share of total merger activity.

Examination of the 1915–1920 revival of merger activity suggests that the consolidation form of merger was more commonly found in industries of sharply increased merger activity. This generalization is encouraged by the predominance of consolidations in almost all industries in the huge turn-of-the-century merger wave.

### *State of Incorporation*

Mergers are governed by state corporation laws, which define the conditions under which a corporation can secure capital, the lines of business in which it can engage, and its power to hold the stock of other corporations. If the corporate charter permits wide latitude in these matters, it will be easy for the firm to engage in merger activity. If the charter is strict, merger will be difficult or impossible.

The liberalization of the corporation laws of a number of states, commencing in the late 1880's, may have helped initiate the high levels of merger activity of the turn of the century and the subsequent establishment of mergers as a continuing phenomenon in

the American economy. With the New Jersey Holding Company Act of 1888 a competition arose among several states to induce businesses to incorporate under their laws—largely, no doubt, in order to bolster the states' finances with revenues from incorporation fees.

To observe the pattern of states leading in merger incorporations, and the shifts among the states over time, may suggest the degree to which consolidations activity responded to changes in the corporation laws of different states. The distributions presented below are limited, perforce, to consolidations, which, being new incorporations, were usually reported in the news, with state of incorporation given. The coverage was very low for mergers by acquisition, which rarely formed a new corporation. It should be recalled that the consolidation form of merger declined in relative importance from 1895 to 1920. Accordingly the findings apply to a smaller share of total merger activity in 1915–1920 than in 1895–1904.

The distribution of consolidation activity by state of incorporation is presented in Table 36. Three states, New Jersey, New York, and Delaware, led in consolidation activity over the twenty-six-year period. Together they accounted for 78 per cent of authorized equity capitalizations, 61 per cent of gross firm disappearances by consolidation, and 55 per cent of the consolidations. Of the three, New Jersey was overwhelmingly the leader, accounting for more than two-thirds of the consolidation capitalizations of the three states, more than three-fourths of gross firm disappearances, and more than one-half of the number of consolidations.

The proportion of capitalizations accounted for by New Jersey was almost twice its proportion of the number of consolidations, indicating that a large share of the most highly capitalized consolidations were organized in New Jersey. The excess of the proportion of gross firm disappearances by consolidation over that of the number of consolidations indicates that New Jersey also had more than its proportionate share of many-firm consolidations.

For New York and Delaware consolidations the proportion of capitalizations matched closely the proportion of consolidations. suggesting that these two states did not have more than their share of highly capitalized consolidations. Their lower share of gross firm disappearances relative to their number of consolidations indicates that they had few many-firm mergers.

Much of the contrast between New Jersey on the one hand, and New York and Delaware on the other, is explained by shifts among the leading consolidation states within the twenty-six-year period.

TABLE 36
Distribution of Consolidations by State of Incorporation, 1895–1920
(*per cent*)

| *State* | *Consolidation Capitalizations* | *Gross Firm Disappearances* | *Number of Consolidations* |
|---|---|---|---|
| New Jersey | 54.1 | 47.3 | 29.6 |
| New York | 12.7 | 7.5 | 13.5 |
| Delaware | 11.2 | 6.6 | 11.9 |
| Virginia | 2.8 | 2.8 | 2.7 |
| Pennsylvania | 2.3 | 7.6 | 5.2 |
| Maine | 1.6 | 1.9 | 3.0 |
| West Virginia | 1.3 | 3.5 | 3.7 |
| Ohio | 1.2 | 2.3 | 4.0 |
| Illinois | 0.9 | 2.6 | 1.5 |
| Connecticut | 0.9 | 1.3 | 1.2 |
| Wyoming | 0.9 | 0.6 | 0.7 |
| Massachusetts | 0.6 | 1.0 | 2.8 |
| Missouri | 0.5 | 0.8 | 1.2 |
| California | 0.5 | 0.7 | 1.0 |
| Maryland | 0.4 | 0.8 | 1.0 |
| Michigan | 0.4 | 0.6 | 0.8 |
| 2 states with 3 consolidations each[a] | 0.3 | 0.4 | 1.0 |
| 3 states with 2 consolidations each[b] | 0.3 | 0.7 | 1.0 |
| 14 states with 1 consolidation each[c] | 0.9 | 1.8 | 2.4 |
| England and Canada | 0.1 | 0.4 | 0.7 |
| Place of incorporation not given | 5.8 | 8.8 | 11.4 |
| TOTAL ABSOLUTE CONSOLIDATION ACTIVITY | $9.1 billion | 4,444 | 559 |

Detail may not add to totals because of rounding.

[a] Rhode Island and Utah.

[b] Indiana, Louisiana, and South Carolina.

[c] Arizona, Colorado, Florida, Georgia, Kansas, Kentucky, Minnesota, North Carolina, Oklahoma, Oregon, South Dakota, Tennessee, Texas, and Washington. The thirteen states for which no consolidations were indicated were Alabama, Arkansas, Idaho, Iowa, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Vermont, and Wisconsin.

As Table 37 reveals, New Jersey dominated the first decade of consolidation activity but became completely inactive in the last six years of the period. New York and Delaware, on the other hand, rose from a minor fraction of 1895–1904 merger activity to share equally in a position of leadership in 1915–1920. Whereas New Jersey accounted for 79.1 per cent of 1895–1904 consolidation capitalizations, New York and Delaware together accounted for 75.3 per cent of 1915–1920 capitalizations. Delaware's rise apparently lagged behind that of New York, as comparison of the 1905–1914 shares of consolidation activity indicates. Examination of the 1915–1920 shares of the two states also suggests that New York had a greater proportion of highly capitalized consolidations than

TABLE 37

Consolidation Activity in Leading States, 1895–1920

| Period and Measure of Consolidation Activity | Percentage of Total Consolidation Activity | | | | | | | Total Consolidation Activity |
|---|---|---|---|---|---|---|---|---|
| | New Jersey | New York | Delaware | Pennsylvania | West Virginia | Virginia | Maine | |
| Capitalizations: | | | | | | | | |
| 1895–1904 | 79.1 | 3.7 | 2.6 | 3.2 | 0.7 | 0.6 | 0.8 | $6,026,580,000 |
| 1905–1914 | 20.5 | 16.3 | 8.3 | 1.3 | 4.8 | 5.7 | 8.4 | 1,184,493,000 |
| 1915–1920 | 0.0 | 37.1 | 38.2 | 0.4 | 1.0 | 7.3 | 0.0 | 1,905,287,000 |
| Disappearances: | | | | | | | | |
| 1895–1904 | 61.3 | 5.5 | 1.9 | 9.2 | 1.7 | 1.9 | 1.4 | 3,141 |
| 1905–1914 | 14.4 | 15.6 | 6.8 | 4.4 | 9.9 | 3.2 | 5.5 | 780 |
| 1915–1920 | 0.0 | 18.5 | 34.8 | 2.8 | 5.1 | 8.3 | 0.0 | 515 |
| Consolidations: | | | | | | | | |
| 1895–1904 | 50.0 | 9.7 | 3.8 | 7.2 | 3.1 | 0.9 | 2.8 | 313 |
| 1905–1914 | 12.2 | 17.3 | 7.2 | 3.6 | 6.5 | 2.9 | 6.5 | 132 |
| 1915–1920 | 0.0 | 18.6 | 35.0 | 2.1 | 2.1 | 6.4 | 0.0 | 114 |

Source: Worksheets.

Delaware.[13] This period saw the rise of Delaware among the leading states of incorporation, but not yet to the full ascendancy it later attained.

The foregoing shifts explain the pattern of shares of merger activity shown in Table 36. New Jersey was the leader during the huge turn-of-the-century consolidation wave in which the highly capitalized many-firm consolidation was common. There were twenty consolidations incorporated at $50 million and over in New Jersey in this period, including the $200 million Federal Steel and the $1,370 million U.S. Steel consolidations. Accordingly, New Jersey's share of capitalizations and disappearances exceeded its share of the number of consolidations.

New York and Delaware shared the leadership of the later period, 1915–1920, in which the consolidation of two, three, or four firms was most common. The small number of firm disappearances was compensated by the occurrence of large consolidations in these states. Delaware granted charters to the $50 million Consolidated Textile and $198 million Transcontinental Oil consolidations of 1919, and the $100 million Wheeling Steel consolidation

[13] A study of companies listed on the New York Stock and Curb Exchanges in 1932 placed the full ascendancy of the Delaware corporation in the late 1920's. The years 1910–1919 saw Delaware overtake and pass New York and the further decline of New Jersey from its peak in the late 1890's. The period of the leadership of the New York corporation is 1905–1914. See R. C. Larcom, *The Delaware Corporation*, Johns Hopkins Press, 1937, Charts VI and VII, pp. 175–176.

of 1920. New York was the state chosen for incorporation of the $56 million United Motors consolidation of 1916, the $283 million Union Carbide and Carbon consolidation of 1917, and the $283 million Allied Chemical and Dye consolidation of 1920. Virginia accounted for the one remaining very large consolidation of this period with the 1919 incorporation of Invincible Oil at $50 million.

Of the five large consolidations in the middle decade 1905–1914, New Jersey chartered Corn Products Refining ($80 million) in 1906 and General Motors ($60 million) in 1908. The Emerson Brantingham (1912), Goldfield Consolidated Mines (1906), and Tobacco Products (1912) consolidations, each capitalized at $50 million, took place respectively in Illinois, Wyoming, and Virginia.

The variety of industries represented in a state's merger incorporations offers another indication of the attractiveness of its corporation laws. This can be examined, briefly, for several of the leading consolidation states.

New Jersey and Delaware entertained the greatest industrial variety of incorporations, and New York a large variety too. By comparing the numbers of industries incorporated in the three leading states to the number of industries in which more than two consolidations took place (Table 38) we can remove some of the distortion introduced by the several industries of low consolidation activity. Thus compared, the popularity of New Jersey, Delaware, and New York emerges even more clearly.

TABLE 38

Industrial Diversity of Consolidations in Leading States, 1895–1920
*(number of consolidations and of industries)*

| | *New Jersey* | *Dela-ware* | *New York* | *Penn-sylvania* | *West Virginia* | *Industries having—* Consoli-dations | *Industries having—* More than 2 consoli-dations |
|---|---|---|---|---|---|---|---|
| 1895–1904 | | | | | | | |
| Consolidations | 160 | 12 | 31 | 23 | 10 | | |
| Industries | 23 | 9 | 14 | 9 | 8 | 26 | 20 |
| 1905–1914 | | | | | | | |
| Consolidations | 17 | 10 | 24 | 5 | 9 | | |
| Industries | 11 | 9 | 9 | 3 | 3 | 25 | 13 |
| 1915–1920 | | | | | | | |
| Consolidations | 0 | 49 | 26 | 3 | 3 | | |
| Industries | 0 | 16 | 10 | 3 | 3 | 21 | 11 |
| 1895–1920 | | | | | | | |
| Consolidations | 177 | 71 | 81 | 31 | 22 | | |
| Industries | 23 | 21 | 18 | 10 | 8 | 27 | 25 |

Source: Worksheets.

The variety of industries represented by firms consolidating in New Jersey and Delaware was not the result of a wide variety of indigenous industries: both states were small in area and narrow in industrial representation. New York had a relatively wide variety of industries operating within its borders, and part of its popularity can be traced to this fact. By and large, however, the leading states attracted consolidations in industries in which the major share of activity was carried on in other states (Table 39).

Comparisons of the consolidation activity in primary metals and bituminous coal between the three leading incorporation states and two others are presented in Table 40. Pennsylvania and West Virginia were chosen because they were the centers of these two industries of high consolidation activity.

TABLE 39

Consolidations in Leading Incorporation States and in States Leading in Industrial Activity for Selected Industries, 1895–1920

| *Industry* (SIC) | *Number of Consolidations Incorporated in—* | | | |
|---|---|---|---|---|
| | *Leading industrial state*[a] | *New Jersey* | *Delaware* | *New York* |
| Textiles (22) | 4 (Mass.) | 8 | 3 | 5 |
| Iron and steel (331–332) | 4 (Pa.) | 21 | 7 | 3 |
| Motor vehicles (371) | 1 (Ohio) | 5 | 6 | 5 |
| Meat products (201) | 1 (Ill.) | 0 | 2 | 0 |
| Agricultural machinery (352) | 1 (Ill.) | 3 | 0 | 0 |
| Fertilizers (287) | 0 (Ga.) | 0 | 2 | 3 |
| Electrical machinery etc. (36) | 0 (Mass.) | 4 | 1 | 3 |
| Bituminous coal mining (12) | 9 (Pa.) | 4 | 2 | 2 |

[a] In terms of number of wage earners employed in industry: *Census of Manufactures, 1905*, Bureau of the Census, Vols. III and IV.

TABLE 40

Average Capitalizations and Number of Consolidations in Primary Metals and Bituminous Coal, Five States, 1895–1920

| | *State of Incorporation* | | | | |
|---|---|---|---|---|---|
| | *New Jersey* | *Delaware* | *New York* | *Pennsylvania* | *West Virginia* |
| AVERAGE CONSOLIDATION CAPITALIZATION (millions of dollars) | | | | | |
| Primary metals | 71.5 | 23.5 | 6.6 | 2.4 | 6.0 |
| Bituminous coal | 18.3 | 7.5 | 7.7 | 6.2 | 6.0 |
| NUMBER OF CONSOLIDATIONS | | | | | |
| Primary metals | 31 | 10 | 8 | 5 | 0 |
| Bituminous coal | 4 | 2 | 3 | 9 | 10 |

Source: Worksheets.

The leading consolidation states attracted the more highly capitalized consolidations in both industries. The average primary metal consolidation in New Jersey, Delaware, and New York was capitalized at $51.2 million, while in Pennsylvania and West Virginia it was capitalized at $2.4 million. The average bituminous coal capitalization in New Jersey, New York, and Delaware was $12.3 million, while in Pennsylvania and West Virginia it was $6.1 million. Moreover, the leading consolidation states attracted most of the primary metals consolidations, which on the average were more highly capitalized than those in the bituminous coal industry. Most of the smaller bituminous coal consolidations took place in their home states of Pennsylvania and West Virginia.

SUMMARY

The incorporation of consolidations was concentrated in New Jersey, New York, and Delaware. New Jersey dominated the first decade (1895–1904) of the period, but declined to zero activity by 1915. New York and Delaware rose to joint leadership of 1915–1920 consolidation activity, with Delaware lagging behind New York in the middle decade 1905–1914. This shift among the leading states seemed to follow, in a rough way, the shift in the leading states for incorporation activity in general.

The leading incorporation states attracted a wider industrial variety of consolidations than other states. This suggests that corporation laws permitting free choice of lines of business did attract many consolidations that might otherwise have incorporated in their home states.

The most highly capitalized consolidations commonly chose leading incorporation states. This suggests that corporation laws setting higher limits on authorized capitalizations and permitting greater freedom in organizing financial structures attracted the large consolidations.